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CLAIMS

1.   An electronic system (100), comprising:

a plurality of function cards (138-1 through 138-M), each having at least one

5   programmable device (142-1 through 142-M) residing thereon; and

a configuration control card (140) coupled to each one of said plurality of function cards (138-1 through 138-M); wherein said configuration control card (140) configures said at least one programmable device (142-1 through 142-M) residing on each one of said plurality of function cards (138-1 through 138-M).

10   2.   The apparatus of claim 1, and further comprising:

a memory subsystem (146) residing on said configuration control card (140);

wherein said configuration control card (140) configures said at least one programmable device (142-1 through 142-M) residing on each one of said plurality of function cards (138-1 through 138-M) using configuration information stored in said memory

15   subsystem (146).

3.   The electronic system of claim 2, wherein said configuration control card (140) further comprises:

a main controller (148) coupled to said memory subsystem (146) and said plurality of function cards (138-1 through 138-M);

20   said main controller (148) configuring each one of said plurality of function cards (138-1 through 138-M) using said configuration information stored in said memory subsystem (146).

4.   The apparatus of claim 3, wherein each one of said at least one programmable device (142-1 through 142-M) residing on each one of said plurality of function cards (138-1 through

25   138-M) is a field programmable gate array ("FPGA").

5.   The apparatus of claim 3, and further comprising:

a peripheral controller (144-1 through 144-M) residing on each one of said plurality of function cards (138-1 through 138-M);

each one of said peripheral controllers (144-1 through 144-M) attending to: (1)

30   forwarding requests for configuration, originated by said programmable device (142-1 through 142-M) residing with said peripheral controller (144-1 through 144-M) on one of said function cards (138-1 through 138-M), to said main controller (148); and (2) attending to forwarding

configuration information, provided by said main controller (148) to said programmable device (142-1 through 142-M) residing with said peripheral controller (144-1 through 144-M) on one of said function cards (138-1 through 138-M).

6.   The apparatus of claim 2, wherein said plurality of function cards (138-1 through 138-M) further comprises:

a plurality of function cards (136-1 through 136-N) of a first type, said first type of function cards (136-1 through 136-N) requiring a first set of instructions for configuration thereof;

a plurality of function cards (138-1 through 138-M) of a second type, said second type of function cards (138-1 through 138-M) requiring a second set of instructions for configuration thereof;

said first set of instructions stored in a first area (149-1) of said memory subsystem (146) and said second set of instructions stored in a second area (149-2) of said memory subsystem (146);

wherein said configuration control card (140) configures said plurality of function cards (136-1 through 136-N) of said first type using said first set of instructions stored in said first area (149-1) of said memory subsystem (146) and said configuration control card (140) configures said plurality of function cards (138-1 through 138-M) of said second type using said second set of instructions stored in said second area (149-2) of said memory subsystem (146).

7.   The apparatus of claim 6, wherein said configuration control card (140) further comprises:

a main controller (148) coupled to said memory subsystem (146), said plurality of function cards (136-1 through 136-N) of said first type and said plurality of function cards (138-1 through 138-M) of said second type;

said main controller (148) configuring each one of said plurality of function cards (136-1 through 136-N) of said first type using said first set of instructions stored in said first area (149-1) of said memory subsystem (146); and

said configuration control card (140) configuring each one of said plurality of function cards (138-1 through 138-M) of said second type using said second set of instructions stored in said second area (149-2) of said memory subsystem (146).

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8.   The apparatus of claim 7, and further comprising:

a peripheral controller (144-1 through 144-M) residing on each one of said plurality of function cards (136-1 through 136-N, 138-1 through 138-M);

each one of said peripheral controllers (144-1 through 144-M) attending to forwarding

5   requests for configuration, originated by said programmable device (142-1 through 142-M) residing with said peripheral controller (144-1 through 144-M) on one of said function cards (136-1 through 136-N, 138-1 through 138-M), to said main controller (148); and

each one of said peripheral controller (144-1 through 144-M) further attending to forwarding configuration information, provided by said main controller (148) to said

10   programmable device (142-1 through 142-M) residing with said peripheral controller (144-1 through 144-M) on one of said function cards (136-1 through 136-N, 138-1 through 138-M).

9.   A broadcast router (100), comprising:

a first router card (134a) having an input side, an output side and at least one programmable device (142-1 through 142-M) residing thereon;

15   a plurality of input cards (136-1 through 136-N), each one of said plurality of input cards (136-1 through 136-N) coupled to said input side of said router card (134a) and having at least one programmable device (142-1 through 142-M) residing thereon;

a plurality of output cards (138-1 through 138-M), each one of said plurality of output cards (138-1 through 138-M) coupled to said output side of said router card (134a) and having

20   at least one programmable device (142-1 through 142-M) residing thereon; and

a configuration control card (140) coupled to said router card (134a), each one of said plurality of input cards (136-1 through 136-N) and each one of said plurality of output cards (138-1 through 138-M), said configuration control card (140) configuring said at least one programmable device (142-1 through 142-M) residing on said router card (134a), each one of

25   said plurality of input cards (136-1 through 136-N) and each one of said plurality of output cards (138-1 through 138-M).

10.   The apparatus of claim 9, and further comprising:

a second router card (134b) having an input side, an output side and at least one programmable device (142-1 through 142-M) residing thereon;

30   each one of said plurality of input cards (136-1 through 136-N) further coupled to said input side of said second router card (134b); each one of said plurality of output cards (138-1 through 138-M) further coupled to said output side of said second router card (134b);

said configuration card further configuring said at least one programmable device (142-1 through 142-M) residing on said second router card (134b).

11.   The apparatus of claim 9, and further comprising:

a memory subsystem (146) residing on said configuration control card (140), said memory subsystem (146) including a first memory area (149-1), a second memory area (149-2) and a third memory area (149-3);

wherein said configuration control card (140) configures said at least one programmable device (142-1 through 142-M) residing on each one of said plurality of input cards (136-1 through 136-N) using configuration information stored in said first area (149-1) of said memory subsystem (146), configures said at least one programmable device (142-1 through 142-M) residing on said first router card (134a) using configuration information stored in said second area (149-2) of said memory subsystem (146), and configures said at least one programmable device (142-1 through 142-N) residing on each one of said plurality of output cards (138-1 through 138-M) using configuration information stored in said third area (149-3) of said memory subsystem (146).

12.   The apparatus of claim 7, wherein each one of said programmable devices (142-1 through 142-N) residing on each one of said plurality of input cards (136-1 through 136-N), said first router card (134a), and each one plurality of output cards (138-1 through 138-M) is a field programmable gate array ("FPGA").

13.   The apparatus of claim 12, wherein said configuration control card (140) further comprises:

a memory subsystem (146), said memory subsystem (146) including a first memory area (149-1), a second memory area (149-2) and a third memory area (149-3);

a main controller (148) coupled to said memory subsystem (146), each one of said plurality of input cards (136-1 through 136-N), said first router card (134a), and said plurality of output cards (138-1 through 138-M);

said main controller (148) configuring said at least one FPGA (142-1 through 142-M) of each one of said plurality of input cards (136-1 through 136-N) using a first set of instructions stored in said first area (149-1) of said memory subsystem (146), configuring said at least one FPGA (142-1 through 142-M) of said first router card (134a) using a second set of instructions stored in said second area (149-2) of said memory subsystem (146) and configuring said at least one FPGA (142-1 through 142-M) of each one of said plurality of

output cards (138-1 through 138-M) using a third set of instructions stored in said third area (149-3) of said memory subsystem (146).

14.   The apparatus of claim 13, and further comprising:

a second router card (134b) having an input side, an output side and at least one FPGA (142-1 through 142-M) residing thereon;

each one of said plurality of input cards (136-1 through 136-N) further coupled to said input side of said second router card (134b);

each one of said plurality of output cards (138-1 through 138-M) further coupled to said output side of said second router card (134b);

said main controller (148) configuring said at least one FPGA (142-1 through 142-M) of said second router card (134b) using said second set of instructions stored in said second area (149-2) of said memory subsystem (146).

15.   The apparatus of claim 14, and further comprising:

a peripheral controller (144-1 through 144-M) residing on each one of said plurality of input cards (136-1 through 136-N), said first and second router cards (134a and 134b) and each one of said plurality of output router cards (138-1 through 138-M);

each one of said peripheral controllers (144-1 through 144-M) attending to forwarding requests for configuration, originated by said FPGA (142-1 through 142-N) residing with said peripheral controller (144-1 through 144-M) on one of said plurality of input cards (136-1 through 136-N), said first router card (134a), said second router cards (134b) or one of said output cards (138-1 through 138-M), to said main controller (148); and

each one of said peripheral controller (144-1 through 144-N) further attending to forwarding configuration information, provided by said main controller (148), to said FPGA (142-1 through 142-M) residing with said peripheral controller (144-1 through 144-M) on one of said input cards (136-1 through 136-N), said first router card (134a), said second router card (134b) or one of said output cards (138-1 through 138-M).

16.   For a broadcast router (100) having at least one card (134a through 134b, 136-1 through 136-N, 138-1 through 138-M) on which one or more configurable devices (142-1 through 142-M) reside, a method for configuring said broadcast router (100), comprising:

issuing a first request for configuration, said first request for configuration issued by a first configurable device (142-1 through 142-M) residing on a first one of said at least one card (134a through 134b, 136-1 through 136-N, 138-1 through 138-M);

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retrieving configuration information from a shared configuration repository (146); and

configuring said requesting configurable device (142-1 through 142-M) using said configuration information retrieved from said shared configuration repository (146).

17.   The method of claim 16, and further comprising:

5   issuing a second request for configuration, said second request for configuration issued by a second configurable device (142-1 through 142-M) residing on a second one of said at least one card (134a through 134b, 136-1 through 136-N, 138-1 through 138-M);

retrieving said configuration information from said shared configuration repository (146); and

10   configuring said second requesting configurable device (142-1 through 142-M) using said configuration information retrieved from said shared configuration repository (146);

wherein the same configuration information is used to configure said first and second requesting configurable devices (142-1 through 142-M).

18.   The method of claim 16, wherein said broadcast router (100) includes at least one card

15   (136-1 through 136-N) of a first type and at least one card (138-1 through 138-M) of a second type, each one of said at least one card (136-1 through 136-N, 138-1 through 138-M) of said first and second types having at least one configurable device (142-1 through 142-M) residing thereon, and further comprising:

storing a first set of instructions in a first area (149-1) of said shared configuration

20   repository (146);

storing a second set of instructions in a second area (149-2) of said shared configuration repository (146);

retrieving said first set of instructions if said requesting configurable device (142-1 through 142-M) resides on said at least one card (136-1 through 136-N) of said first type;

25   retrieving said second set of instructions if said requesting configurable device (142-1 through 142-M) resides on said at least one card (138-1 through 138-M) of said second type.

if said requesting configurable device (142-1 through 142-M) resides on said at least one card (136-1 through 136-N) of said first type, configuring said requesting configurable device (142-1 through 142-M) using said first set of instructions retrieved from said first area

30   (149-1) of said shared configuration repository (146); and   if said requesting configurable device (142-1 through 142-M) resides on said at least one card (138-1 through 138-M) of said second type, configuring said requesting configurable device (142-1 through 142-M) using

said second set of instructions retrieved from said second area (149-2) of said shared configuration repository (146).

19.   The method of claim 16, wherein said broadcast router (100) further comprises a configuration control card (140) on which a main controller (148) and said shared configuration repository (146) reside, and further comprising:

said main controller (148) detecting said first request for configuration issued by said first one of said one or more configurable devices (142-1 through 142-M) residing on said first one of said at least one card (134a through 134b, 136-1 through 136-N, 138-1 through 138-M);

said main controller initiating a configuration algorithm upon expiration of a time period subsequent to said detected first request for configuration, said time period allowing additional ones of said one or more configurable devices (142-1 through 142-M) to request configuration before said configuration algorithm is initiated.

20.   The method of claim 19, wherein said configuration algorithm further comprises:

selecting a first configurable device residing on one of said at least one cards (134a through 134b, 136-1 through 136-N, 138-1 through 138-M) of said broadcast router (100);

querying said selected configurable device as to whether it desires configuration;

if said selected configurable device indicates that it desires configuration, propagating configuration information to said selected configurable device;

selecting a next configurable device residing on one of said at least one cards (134a through 134b, 136-1 through 136-N, 138-1 through 138-M) of said broadcast router (100); and

repeating said querying, propagating and selecting steps until all of said one or more configurable device (142-1 through 142-M) have been queried.